



LEXSEE 953 F.2D 1360

STANDARD HAVENS PRODUCTS, INC., Plaintiff-Appellee, v. GENCOR INDUSTRIES, INC., Defendant-Appellant.

90-1048

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

953 F.2d 1360; 1991 U.S. App. LEXIS 30232; 21 U.S.P.Q.2D (BNA) 1321

December 31, 1991, Decided

SUBSEQUENT HISTORY: Petition on Rehearing Denied February 12, 1992, Reported at 1992 U.S. App. LEXIS 2351. In Banc Suggestion Declined March 20, 1992, Reported at 1992 U.S. App. LEXIS 5227.

PRIOR HISTORY: [**1] Appealed from: United States District Court for the Western District of Missouri. J. Hunter

DISPOSITION: AFFIRMED-IN-PART, VACATED-IN-PART, AND REMANDED

COUNSEL: Edmund J. Sease, of Zarley, McKee, Thomte, Voorhees & Sease, Des Moines, Iowa, argued for plaintiff-appellee. With him on the brief were Donald H. Zarley and Kirk M. Hartung.

Donald R. Dunner, of Finnegan, Henderson, Farabow, Garrett & Dunner, Washington, D.C., argued for defendant-appellant. With him on the brief were Thomas H. Jenkins, Barry W. Graham and Darrel C. Karl. Of counsel was James K. Hammond.

JUDGES: Before ARCHER and MICHEL, Circuit Judges, and SENTER, Chief Judge.¹

1 Honorable L. T. Senter, Jr., Chief Judge of the United States District Court for the Northern District of Mississippi, sitting by designation.

OPINION BY: ARCHER

OPINION

[*1363] ARCHER, *Circuit Judge*.

Gencor Industries, Inc. (Gencor) appeals from a judgment of the United States District Court for the Western District of Missouri, No. 88-1209-CV-W-3, August 8, 1989, holding, *inter alia*, that: (1) *U.S. Patent No. 4,787,938* ('938 patent) is not invalid and was infringed by Gencor; (2) Standard Havens Products, Inc. (Standard Havens) is entitled to damages for patent infringement of \$ 5,931,000; [**2] and (3) Standard Havens is entitled to damages of \$ 2,284,000 on its breach of contract claim. We affirm-in-part, vacate-in-part, and remand.

I

BACKGROUND

A. *The Technology*

The '938 patent, issued to Michael R. Hawkins on November 29, 1988 and assigned to Standard Havens, is directed to a method of producing asphalt compositions.

Asphalt compositions were often produced in a large horizontal rotating drum. Water-laden aggregate (*e.g.*, crushed rock) was introduced at one end of the drum, was heated and dried by a stream of hot gases produced by a burner flame. The dried aggregate was then combined with liquid asphalt, mineral binder or fines (*i.e.*, crushed materials to impart thickness or body), and in some instances recycled asphaltic material removed from road surfaces, to produce an asphalt composition.

In one method, known as a co-current or parallel flow system, the hot gases produced by a burner flame flowed in the same direction as the aggregate and other ingredients to be mixed to the opposite end of the drum. In another method, styled counter-flow or countercurrent, the aggregate and other ingredients to be mixed

flowed in a direction opposite that of the hot [**3] gas stream.

In those systems, the asphalt industry faced problems with pollution and product degradation. Exposing the liquid asphalt and recycled asphaltic material to excessive temperatures within the drum or in close [*1364] proximity to the burner flame caused serious product degradation and produced hazardous pollutants known as "blue smoke."

B. The '938 Patent

Hawkins, in his invention as disclosed in the '938 patent, attempted to solve the product degradation and pollution problems by isolating the liquid asphalt (and recycled asphaltic material, when used) from the radiant heat flux of the burner flame and from the hot gases produced therefrom. He did so by creating within the drum a zone for mixing the aggregate and liquid asphalt (and any other materials to be mixed) and keeping that zone away from the flame and its hot gases. An exterior view (Figure 1) and an interior view (Figure 3) of the Hawkins' drum mixer, as described in the patent specification, follow:

[SEE Fig. 1. IN ORIGINAL]

[SEE Fig. 3. IN ORIGINAL]

Like much of the prior art, Hawkins' described embodiment uses a rotating, inclined drum for mixing the asphalt composition. Aggregate, delivered at a first end 22, [**4] rotates toward the opposite end 36 by force of gravity due to an incline. (The incline is not shown here.) Initially, the aggregate is heated and dried by hot gases in a first zone, to the left of the burner head 46. Then, the aggregate enters a second zone -- the annular area to the right of the burner head, particularly past the recycle feed assembly 60 (which allows introduction of recycled asphalt material into the drum) and between the combustion assembly 40 and the drum cylinder 10. In the second zone, aggregate is mixed with hot liquid asphalt and any other needed materials. The hot, mixed asphalt composition is then discharged via a mouth 36.

A gas stream is heated at the burner head and flows in a countercurrent manner through the drum to the first end (where the aggregate is introduced). Figure 3 shows the burner head fed by fuel line 45. The burner head and fuel line are part of the combustion assembly. The combustion assembly also includes a secondary air tube 42 which surrounds the primary tube 44. Fuel and primary air forced by the blower 48 are sent through the primary tube to the burner head. Secondary air, in the space between the primary tube and the secondary air [**5] tube (see the arrows in Figure 3), supports combustion at the burner head.

The '938 patent has these four method claims:

1. A method for continuously producing an asphaltic composition from asphalt [*1365] and aggregates, the steps of said method comprising:

introducing aggregate material interiorly of a first end of an inclined, horizontal rotating drum to flow generally from said first end to the second end of said drum;

generating a hot gas stream within said drum to flow through said drum to said first end in countercurrent relation to said aggregate material;

isolating a zone of said rotating drum from said hot gas stream;

delivering said heated and dried aggregate material to said zone isolated from said hot gas stream;

mixing said aggregate material with liquid asphalt within said zone isolated from said hot gas stream to produce an asphaltic composition; and

discharging said asphaltic composition from said rotating drum.

2. The method as set forth in claim 1, including the step of adding recycle asphalt material directly to said zone isolated from said hot gas stream.

3. The method as set forth in claim 1, including the steps of creating a curtain of falling aggregate material within [**6] said rotating drum and flowing said hot gas stream through said curtain of falling aggregate material.

4. The method as set forth in claim 1, including the step of blending a fine binder material with said liquid asphalt and aggregate material within said zone isolated from said hot gas stream.

C. Confidentiality Agreement

The contract involved in this case is a nondisclosure agreement for consulting and technical services dated May 13, 1986. Prior thereto, Standard Havens had contacted General Combustion Corporation, a wholly owned subsidiary of Gencor, to obtain consulting services in the design and manufacture of a burner for Standard Havens' proposed counterflow asphalt plant based upon the method described in the Hawkins '938 patent. The nondisclosure agreement required Gencor to maintain as confidential the information obtained from Standard Havens.

D. Litigation

Standard Havens initially sued Gencor for breach of the nondisclosure agreement. Gencor counterclaimed, seeking a declaratory judgment that the Hawkins patent was invalid. In response, Standard Havens charged Gen-

cor with contributing to or inducing infringement of the '938 patent, particularly via production [**7] of its asphalt-producing "Ultraplant."

Trial was conducted for thirteen days before a jury. The jury answered a special verdict form, finding that the claimed invention was neither anticipated nor would have been obvious, *see* 35 U.S.C. §§ 102, 103 (1988), that Gencor had contributed to and induced infringement of the '938 patent, and that Standard Havens had been damaged by that infringement in the amount of \$ 5,931,000 (covering sales of ten asphalt plants from the time the patent issued in 1988 until trial in 1989). Regarding the confidentiality agreement, the jury found that a valid contract existed between Standard Havens and Gencor, and that Standard Havens had fulfilled its obligations under the contract, but that Gencor had not fulfilled its obligations. The jury found Standard Havens damaged in the amount of \$ 2,284,000 by breach of the contract, covering sales of five asphalt plants from May, 1986 until the patent issued and the value of lost profits from future parts sales. Judgment, including a permanent injunction, was entered against Gencor on August 8, 1989.

Gencor filed motions for judgment notwithstanding the verdict (JNOV) and alternatively for a new trial contending, [**8] *inter alia*, anticipation and obviousness of the invention in light of two Hepburn patents (*U.S. Patent No. 1,774,649* (Hepburn '649) issued in 1930 and *U.S. Patent No. 1,836,754* (Hepburn '754) issued in 1931) and contesting the infringement finding and the amount of damages (both patent and contract). In an order dated September 1, 1989, the district court denied both motions.

[*1366] E. *The Certificate of Correction*

Shortly before commencement of trial, Standard Havens requested from the United States Patent & Trademark Office (PTO) a Certificate of Correction for the '938 patent. The Certificate was granted on the day trial began and was entered into evidence. It added twelve United States patents to the "References Cited" section of the '938 patent, including the two Hepburn patents mentioned above. After the jury verdict was rendered in the case but before the court acted on the post-trial motions, the Commissioner of Patents ordered that approval of the Certificate be withdrawn.

In its motion for a new trial, Gencor included arguments that the district court erred in (1) receiving as an exhibit the Certificate of Correction, and (2) refusing to declare a new trial after the [**9] PTO withdrew its Certificate. As indicated above, the motion was denied in all respects.

F. *Appeal to the Federal Circuit*

Gencor appealed the district court judgment on November 6, 1989. Gencor argues: (1) the '938 patent claims are invalid in view of Hepburn '649; (2) if the '938 patent claims are construed to maintain their validity, such claim construction compels a finding of non-infringement; (3) the district court erred in admitting into evidence the Certificate of Correction and in not declaring a new trial after the PTO withdrew that Certificate subsequent to the jury verdict; (4) if the patent judgment is reversed or vacated, the judgment on the contract verdict should be vacated and remanded because the patent issues are not so distinct that the contract issues may be treated separately without prejudice; and (5) the jury's damage awards (both patent and contract) are not supported by substantial evidence and are otherwise inappropriate.

G. *The Reexamination Proceeding*

Shortly after the Certificate of Correction was withdrawn, the Commissioner ordered reexamination of the '938 patent which, as noted by the district court, "was issued *sua sponte* within the [**10] meaning of the statute . . . [but] the matter was brought to the Commissioner's attention" by Gencor's counsel.

The reexamination examiner rejected all claims of the '938 patent on a variety of grounds, including the Hepburn references and references not at issue on appeal here. On May 10, 1991, while the appeal was awaiting decision by this court,² the Board of Patent Appeals and Interferences (Board) issued its decision, affirming most of the grounds of rejection found by the examiner.

2 This court directed the parties to file supplemental briefs on whether it should stay this appeal until there is a final decision in the reexamination matter. In response, both parties stated that they did not want a stay. We agree that a stay is not appropriate. First, the Board's May 10, 1991 reexamination decision (reconsideration denied September 27, 1991) rejecting the subject claims is subject to judicial review. 35 U.S.C. §§ 141, 145 (1988). In that sense, it is not a final adjudication of the matter. *See* 35 U.S.C. § 307(a) (1988). ("In a reexamination proceeding . . . when the time for appeal has expired or any appeal proceeding has terminated, the Commissioner will issue and publish a certificate canceling any claim of the patent finally determined to be unpatentable. . . .") Second, Standard Havens stated in its supplemental brief that it intends to institute a civil action in the district court under 35 U.S.C. § 145 challenging the Board's adverse reexamination decision. Hence, it may be many months before the reexamination matter is finally adjudicated. Finally, we note that the Board's reexami-

nation proceeding considering patentability and the district court's infringement suit considering validity are distinct proceedings, with different records and different standards of proof. *See Ethicon, Inc. v. Quigg*, 849 F.2d 1422, 1427, 7 USPQ2d 1152, 1155-56 (Fed. Cir. 1988) (citing *In re Etter*, 756 F.2d 852, 856, 225 USPQ 1, 4 (Fed. Cir. 1985) (in banc)).

[**11] II

ISSUES

1. Did the district court err in denying Gencor's motion for JNOV or new trial on anticipation (claims 1, 3, and 4) and obviousness (claim 2) grounds?

2. Did the district court err in denying Gencor's motion for JNOV or new trial on infringement?

[*1367] 3. Did the district court err in denying Gencor's motion for a new trial because of the allegedly improper admission in evidence of the Certificate of Correction or in not granting a new trial based on the fact that the Certificate was ordered withdrawn by the Commissioner of Patents?

4. If the judgment on patent validity is vacated or reversed, are the contract issues so intertwined with the patent issues that judgment based on the contract must also be vacated? ³

3 Because of our disposition of the above identified ISSUES 1-3, we need not consider ISSUE 4.

5. Did the district court err in denying Gencor's motion for JNOV or new trial on the patent and contract damage awards?

III

DISCUSSION

A. *Standard of Review of Denials of Motions for JNOV and New Trial.*

[**12] To obtain an appellate reversal of a district court's denial of a motion for JNOV,

appellant must show that the jury's findings, presumed or express, are not supported by substantial evidence or, if they were, that the legal conclusions implied from the jury's verdict cannot in law be supported by those findings. [Citations omitted.]

Perkin-Elmer Corp. v. Computervision Corp., 732 F.2d 888, 893, 221 USPQ 669, 673 (Fed. Cir. 1984). The "substantial evidence" standard for reviewing findings of fact means that the finding must stand unless appellant shows that no reasonable juror could have made it. *See*

Railroad Dynamics, Inc. v. A. Stucki Co., 727 F.2d 1506, 1512-13, 220 USPQ 929, 936 (Fed. Cir. 1984).

A district court has discretion in granting a new trial; hence, in reviewing a denial of a motion for new trial, the abuse of discretion standard applies. *Leichihman v. Pickwick Int'l*, 814 F.2d 1263, 1267 (8th Cir. 1987); *Railroad Dynamics, Inc.*, 727 F.2d at 1512, 220 USPQ at 937; J. Lucas & G. Grotheer, Jr., 6A Moore's Federal Practice, para. 59.08[1] at 59-79 (2d Ed. [**13] 1991). When a motion for new trial is based on the verdict being against the weight of the evidence, the trial court determines whether the jury's verdict is against the clear or great weight of the evidence. *See, e.g., Moxness Prods., Inc. v. Xomed, Inc.*, 891 F.2d 890, 893, 13 USPQ2d 1169, 1171-72 (Fed. Cir. 1989); *Leichihman*, 814 F.2d at 1267; *Beckman v. Mayo Found.*, 804 F.2d 435, 439 (8th Cir. 1986); *Shatterproof Glass Corp. v. Libbey-Owens Ford Co.*, 758 F.2d 613, 626, 225 USPQ 634, 643 (Fed. Cir. 1985). It is the role of the appeals court to decide whether that determination constitutes an abuse of discretion. *Shatterproof Glass*, 758 F.2d at 627, 225 USPQ at 643.

B. *The District Court Correctly Denied Motions for JNOV or New Trial Regarding the Anticipation of '938 Claims 1, 3, and 4.*

Anticipation requires that "all limitations of the claim are found in the reference, or 'fully met' by it." *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983); *In re King*, 801 F.2d 1324, 1326, 231 USPQ 136, 138 (Fed. Cir. 1986); [**14] *Akzo N.V. v. United States Int'l Trade Comm'n*, 808 F.2d 1471, 1479, 1 USPQ2d 1241, 1245 (Fed. Cir. 1986). Here, anticipation involves whether the Hepburn '649 reference discloses all of the elements of the claimed invention. Moreover, because anticipation is a factual determination, *Ralston Purina Co. v. Far-Mar-Co.*, 772 F.2d 1570, 1574, 227 USPQ 177, 179 (Fed. Cir. 1985), the critical question in the JNOV context is whether a reasonable juror could have found that Hepburn '649 failed to anticipate. In the new trial motion context, it is whether the trial court abused its discretion in determining that a finding of "no anticipation" was not against the clear weight of the evidence. We answer the first question affirmatively and the second question in the negative, and hence, we affirm the trial court's conclusion that claims 1, 3, and 4 are not invalid.

The only reference at issue on appeal is [*1368] Hepburn '649. ⁴ Like the Hawkins '938 patent, Hepburn '649 teaches (and claims) a counterflow method of producing asphalt composition. The embodiment described in Hepburn '649 utilizes the rotating drum depicted below:

[SEE ILLUSTRATION [**15] IN ORIGINAL]

Aggregate material enters a first end of the drum 1 from a hopper 12, continues down a chute 13, and flows toward the opposite end of the drum. From the chute, the aggregate is discharged to a heating chamber 1a. In that chamber, the aggregate is heated to remove the moisture therefrom and is simultaneously subjected to a strong blast of air to free the dried aggregate from fine dust. Next, the aggregate flows to a cooling or waterproofing chamber 1b, where it may be treated with a waterproofing liquid or liquefier such as kerosene. Whether or not the aggregate is treated with a waterproofing liquid or liquefier, it continues flowing through the waterproofing chamber into the mixing chamber 1c. As the aggregate is stirred and subjected to agitation in the mixing chamber, binding and coating material (*i.e.*, liquid asphalt) is continuously sprayed on the aggregate. Air from a fan 9 enters the lower end of the mixing chamber at atmospheric temperature and is impelled toward a burner 20. Upon entering the heating chamber, the air becomes heated by the flame from the burner.

4 Gencor does not argue anticipation based on Hepburn '754. Although the claims differ, Hepburn '649 and Hepburn '754 are very similar; Figures 1-4 in each patent are almost identical. Both patents were before the jury and often discussed by witnesses and the trial judge as a single reference. Because the two Hepburn specifications disclose the same basic concept, evidence about Hepburn '754 is relevant to Hepburn '649.

[**16] Gencor argues that Hepburn '649 teaches exactly what the claims cover, *i.e.*, a mixing zone 1c that is isolated from the hot gas stream in heating chamber 1a. The district court, however, in denying Gencor's motions for JNOV or new trial, stated:

During trial the bulk of defendant's proof on the issues of anticipation and obviousness centered on the Hepburn patents. The Hepburn patents, concerning a process and device for producing asphaltic compounds, teach a method of heating and mixing the raw materials in a rotating drum in which the burner is introduced from the rear of the drum to a point approximately in the middle of the drum. However, unlike the Hawkins process the airstream supplying the burner flows unrestricted through the missing [*sic*, mixing] zone. The plaintiff's expert witnesses testified to several means by which the Hepburn patents could be distinguished from the Hawkins patent. Thus, the Court cannot now conclude that a reasonable jury must have necessarily found that the defendant proved by clear and convincing evidence that the Hepburn patents anticipate the Hawkins patent. Thus, defendant's motion for judgment notwithstanding the verdict on this ground must [**17] be denied.

[*1369] Gencor maintains that the essence of the district court's opinion, and of Standard Havens' case, is that, unlike in Hepburn, no air flows through the mixing zone in the Hawkins invention. Instead, the '938 *patent* shows the air flowing through tubes isolated from the mixing zone. (*See* 42, 44 in Figures 1 and 3 of the '938 *patent, supra*). But, says Gencor, there is no limitation stated in the '938 *patent* claims of "isolating the air flow from the mixing zone." We agree with Gencor on that. Though a key aspect of Hawkins' invention may be to direct the air flow through the secondary and primary tubes instead of through the mixing zone, the '938 *patent* does not contain that limitation. We nevertheless conclude that a reasonable juror could have found that Hepburn '649 does not anticipate the claimed invention.

The claims of the '938 *patent* require that in the mixing drum a zone be isolated from the hot gas stream. (From the '938 *patent* specification, we construe hot gas stream to mean the hot gases in the area around the flame; it does not include the air stream passing through the tube surrounding the burner, leading into the flame and hot gas area.) The claims further [**18] require that, in the "isolated" zone, aggregate and liquid asphalt are mixed so as to produce an asphaltic composition to be discharged from the drum. In that context, the critical question for resolving whether JNOV was properly denied is whether a reasonable juror could have found that Hepburn '649 does not teach such isolation.

Clearly, Hepburn '649 does not *expressly* teach "isolation" of the mixing chamber from the heating chamber. An anticipatory reference, however, need not duplicate word for word what is in the claims. Anticipation can occur when a claimed limitation is "inherent" or otherwise implicit in the relevant reference. *See, e.g., Tyler Refrigeration v. Kysor Indus. Corp.*, 777 F.2d 687, 689, 227 USPQ 845, 846-47 (*Fed. Cir.* 1985).

From the evidence before it, the jury could have reasonably found (*i.e.*, there is "substantial evidence" supporting the fact) that because of the air blown by the fan in Hepburn '649, some of the liquid asphalt sprayed in the mixing chamber would be blown back into the heating chamber. There was direct testimony to that effect, as well as testimony that a Hepburn '649 device would be a blue smoke generator. [**19] Blue smoke is caused by liquid asphalt contacting hot gases.⁵ Thus, the testimony that Hepburn '649 is a blue smoke generator indicates that the fan in Hepburn '649 would blow sprayed asphalt back into the heating chamber.⁶

5 The '938 *patent* itself states that "excessive heating of asphalt compositions also results in substantial air pollution control problems, known as 'blue-smoke', caused when hydrocarbon constituents of asphalt are driven off and released

into the atmosphere." The inventor, Mr. Hawkins, testified that blue smoke "is the result of liquid asphalt being exposed to the flame in the hot gas stream." The hot gas stream "would in a sense burn the liquid asphalt and cause it to smoke."

6 When describing Hepburn '649, we use the phrase "would blow" rather than "is" or "was" blown, because it does not appear that a Hepburn device was ever implemented in the commercial world. Certainly, Gencor points to no evidence in the record showing that the Hepburn device was a commercial device. Mr. McCarter testified that he knew of no Hepburn device ever built.

[**20] Mr. Clements, Standard Havens' chief engineer, testified that the Hepburn '649 device:

would be a blue smoke generator because here you had liquid asphalt or some type--and in some cases kerosene or some other solvent that evaporates very readily would be borne by the air flow--I mean actually the light side on these hydrocarbons we've heard talked about over the period of trial would be carried out past the burner. Some of them would be incinerated perhaps and some of them would go on beyond. But they would generate a tremendous amount of smoke because of the contact with the oxygen in the air and the fast moving heat in the gas stream.

Also, Mr. McCarter, one of Standard Havens' technical witnesses, stated: "It would appear that these things [product particles and liquid asphalt] are introduced [*1370] at about here and it would appear that anything that became frayed would be blown since the air is travelling in the direction, would be blown into the drying and heating chamber . . . [and] would probably catch fire." ⁷

7 Such testimony was in addition to testimony that there would be a risk of explosion when, under one variation of the Hepburn invention, naphtha or kerosene is added to the cooling, waterproofing zone 1b. Also, there was testimony that fines or binder material would be blown by the air stream.

[**21] We conclude from such testimony that substantial evidence supports the presumed finding of the jury that liquid asphalt in Hepburn would be carried into the hot gas stream of the heating chamber causing blue smoke. It was entirely reasonable, therefore, for the jury to conclude that the process of Hepburn '649 does not "isolate" the mixing chamber from the hot gas stream, as called for by the '938 claims. Hence, Hepburn '649 does not anticipate the claimed invention.

Gencor argues that the critical issue is not the fact question of whether Hepburn '649 teaches "isolation,"

but rather, it is the meaning of "isolating" in the claims. Because claim interpretation is a legal question, Gencor urges, the court need not focus on "substantial evidence," *i.e.*, what a reasonable juror could find. Instead, it urges that we should decide *de novo* the meaning of "isolate." By so arguing, of course, Gencor is trying to ease our standard of reviewing the dispositive determinations made by the jury in this case. However, even if the issue turned on claim interpretation, a legal question, rather than on what the reference teaches, a fact question, we must rule in favor of Standard Havens. Given [**22] the jury's critical presumed finding that liquid asphalt is carried into the hot gas stream of Hepburn, which is supported by substantial evidence, Hepburn '649 simply does not teach "isolating" as required by the claims.

We cannot construe the claimed term "isolating" as covering the Hepburn '649 process, where sprayed liquid asphalt is allowed to be blown out of the mixing zone into the heating zone. All air flow in the '938 *patent* is confined to the interior of the primary and secondary air tubes. The limitation of the '938 *patent* for isolating the mixing zone is to prevent the hot liquid asphalt from being exposed to the heating zone. The essential purpose of the Hawkins invention, as stated in the specification, is to eliminate that blue smoke and product degradation problem by keeping liquid asphalt from contacting the hot gas stream. We deem this construction to be not only a reasonable one but, also, to be the only correct one. Thus, the district court did not err in denying Gencor's JNOV motion on claim 1. Nor did it abuse its discretion in denying Gencor's new trial motion in that respect.

Claims 3 and 4, dependent on claim 1, add limitations that have been separately addressed [**23] by Gencor. However, Gencor's arguments do not overcome the basic deficiencies of Hepburn '649 as an anticipatory reference, as discussed above.

C. The District Court Correctly Denied Motions for JNOV or New Trial Regarding the Obviousness of '938 Claim 2.

The jury found that Gencor had not proved that the invention of claim 2 would have been obvious. Invalidity of that claim under 35 U.S.C. § 102 was not at issue because Hepburn '649 does not disclose the step claimed in the '938 *patent* of adding recycle asphalt material to the zone isolated from the hot gas stream.

Nevertheless, Gencor challenged claim 2 under 35 U.S.C. § 103 over Hepburn '649 in view of *U.S. Patent No. 4,797,002* to Heap, which teaches addition of recycled material.

Although Heap provides for adding recycle, Gencor's obviousness argument fails because Heap, in conjunction with Hepburn '649, does not suggest overcoming

ing the basic deficiencies of Hepburn '649, which are explained in section III.B. above. Moreover, an objective criterion of nonobviousness, *i.e.*, solving the problem of blue smoke generation, weighs in favor of nonobviousness. [*1371] Thus, Gencor has not demonstrated that the district court erred in [*24] denying JNOV or abused its discretion in denying a new trial on the *section 103* issue.

D. The District Court Correctly Denied Motions for JNOV or New Trial Regarding Infringement.

Below is a drawing of Gencor's "Ultraplant:"

[SEE ILLUSTRATION IN ORIGINAL]

Gencor's asphalt plant is similar to that claimed in the '938 *patent*. However, two differences are readily apparent. First, Gencor includes a partial divider wall separating the drying from the mixing zone. Where that wall is located there is a structural barrier to isolate further the mixing zone from the drying/heating zone. Second, Gencor adds what is referred to as a "volatile reclaim system (vapor relief outlet to incineration)." That reclaim system "captures the combustibles (*i. e.* hydrocarbons) and odors that are created during the asphalt mixing process and feeds them into the burner converting them from pollutants to fuel."

Gencor does not deny that the addition of two steps to a process that otherwise infringes a claim does not generally avoid infringement. *See, e.g., Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1057, 5 USPQ2d 1434, 1444 (Fed. Cir. 1988). By focusing on its [*25] volatile reclaim system, Gencor argues that any claim interpretation that would distinguish the '938 *patent* claims from Hepburn '649 would compel a "no infringement" holding. Gencor contends that if Hepburn '649 is held nonanticipatory because gas (air) and particles flowing from the mixing chamber into the heating chamber preclude a holding that Hepburn "isolates" one chamber from the other, the Gencor device similarly does not "isolate" because gas (steam) and particles flow from the mixing area into the heating chamber (via the burner). We reject that argument.

In distinguishing Hepburn '649 from the claimed invention, we concluded that "isolating" does not encompass a process where liquid asphalt is allowed to escape into the heating chamber, causing blue smoke. Hepburn '649 is such a process; Gencor's ultraplant is not. With Gencor's device, there is ample evidence in the record that what is being pulled out of the mixing zone is some hydrocarbon material, which is sent through the burner flame to be incinerated.

Hence, we conclude that the district court correctly denied Gencor's motions for JNOV or new trial on infringement.

*E. The District Court Did Not Err in Admitting [*26] the Certificate of Correction or in Refusing to Grant a New Trial When the Certificate Was Withdrawn.*

Gencor argues that it was error for the district court to admit the Certificate of Correction into evidence. It contends that the certificate lacked trustworthiness and [*1372] thus did not qualify as a public record exception to the hearsay rule (*Fed. R. Evid.* 803(8)). The district court stated: "At the time the certificate of correction was offered into evidence, it was a public document . . . and of unquestionable relevance to the instant suit."

Under 35 U.S.C. § 254 (1988), a Certificate of Correction is part of the patent. ⁸ Being a public document and of particular relevance, it was not improper for the trial court to admit the certificate into evidence. Gencor's arguments relating to the trustworthiness of the Certificate are not persuasive.

8 35 U.S.C. § 254 states in pertinent part:

A printed copy [of the Certificate] shall be attached to each printed copy of the patent, and such certificate shall be considered as part of the original patent. Every such patent, together with such certificate, shall have the same effect and operation in law on the trial of actions for causes thereafter arising as if the same had been originally issued in such corrected form.

See also 35 U.S.C. § 255 (1988).

[*27] Gencor also argues that a new trial was required because the Certificate was withdrawn by the PTO after the conclusion of trial and that this was new evidence warranting a new trial. The district court stated:

In the absence of a final ruling on this issue [*i.e.*, the reexamination proceeding] by the patent office, the pending proceeding with regard to the Certificate of Correction does not yet rise to the level of "new evidence" as would justify that the judgment be vacated under *Fed. R. Civ. P.* 60. Therefore, defendant's motion for a new trial on this ground is denied.

Because of the pendency of the reexamination proceeding at the time of the district court opinion, we do not regard the trial court's denial of a new trial as an abuse of its discretion. We leave open the question of whether a *Fed. R. Civ. P.* 60(b)(2) motion should be granted after a final ruling on appeal of the PTO Board's reexamination decision. ⁹

9 In ruling on such a motion, a critical question will be whether the alleged error in admitting the document was harmless, *i.e.*, whether correction of the error could have changed the outcome. *See generally* 7 J. Moore & J. Lucas, *Moore's Federal*

Practice para. 60.23[4], at 200-202 (2d Ed. 1991). The importance of the Certificate seems to be that it was used to verify that the Hepburn patents were considered by the examiner. In this connection, we note that in the file history of the '938 patent the Hepburn patents were mentioned to the examiner at least three times.

[**28] F. *The Patent Damage Award is Vacated, With Remand to the District Court to Redetermine Patent Damages.*

The jury awarded \$ 5,931,000 to Standard Havens for patent infringement. Although there was some evidence about a 25% reasonable royalty rate in the industry, most of the evidence pertained to, and it seems clear that the award was based on, lost profits. Gencor filed a motion for JNOV or, alternatively, for a new trial, claiming, *inter alia*, that the jury's damage awards were not supported by substantial evidence. The motions were denied by the district court, and, on appeal, Gencor claims that the denials were in error and the case should be remanded for determination of a reasonable patent royalty. We agree that the patent damage judgment must be vacated, but we remand the case for redetermination of lost profits.

A lost profits award requires (1) showing that the patent owner would have made the sale but for the infringement, *i.e.*, causation existed, and (2) proper evidence for the computation of the loss of profits. *King Instrument Corp. v. Otari Corp.*, 767 F.2d 853, 863, 226 USPQ 402, 409 (Fed. Cir. 1985). Evidence that shows a [**29] reasonable probability that the patent owner would have made the infringing sales made by the infringer will suffice. *Id.* at 864, 226 USPQ at 409-10; *Lam, Inc. v. Johns-Manville Corp.*, 718 F.2d 1056, 1065, 219 USPQ 670, 675 (Fed. Cir. 1983). Thus, the patent owner need not prove causation as an absolute certainty.

One way to establish causation is the four-part test applied in *Panduit Corp. v. Stahl Bros. Fibre Works*, 575 F.2d 1152, 1156, [*1373] 197 USPQ 726, 729-30 (6th Cir. 1978). To recover under that test, the patent owner must prove (1) a demand for the patented product, (2) an absence of acceptable noninfringing substitutes, (3) the manufacturing and marketing capability to exploit the demand, and (4) the amount of profit the patent owner would have made. *See Kaufman Co. v. Lantech, Inc.*, 926 F.2d 1136, 1140, 17 USPQ2d 1828, 1831 (Fed. Cir. 1991).

Here, the jury was properly instructed on the *Panduit* test. Gencor argues, however, that the jury's presumed finding that there was an absence of acceptable noninfringing substitutes is not supported by substantial [**30] evidence. We disagree.

It is true that the record establishes a competitive market for asphalt plants, with parallel flow plants competing for sales with counterflow plants. However, the mere existence of a competing device does not necessarily make that device an acceptable substitute. *TWM Mfg. Co., Inc. v. Dura Corp.*, 789 F.2d 895, 901, 229 USPQ 525, 529 (Fed. Cir. 1986). A product on the market which lacks the advantages of the patented product can hardly be termed a substitute acceptable to the customer who wants those advantages. *Id.* *See also Panduit*, 575 F.2d at 1162, 197 USPQ at 734. Accordingly, if purchasers are motivated to purchase because of particular features available only from the patented product, products without such features -- even if otherwise competing in the marketplace -- would not be acceptable noninfringing substitutes. *SmithKline Diagnostics, Inc. v. Helena Lab. Corp.*, 926 F.2d 1161, 1166, 17 USPQ2d 1922, 1926 (Fed. Cir. 1991). *See also Slimfold Mfg. Co., Inc. v. Kinkead Indus., Inc.*, 932 F.2d 1453, 1458, 18 USPQ2d 1842, 1846 (Fed. Cir. 1991) [**31] ("[Patent owner] failed to show that buyers of bi-fold metal doors specifically want a door having the advantages of the Ford patent . . .") (emphasis own).

Thus, to prove that there are no acceptable noninfringing substitutes, the patent owner must show either that (1) the purchasers in the marketplace generally were willing to buy the patented product for its advantages, or (2) the specific purchasers of the infringing product purchased on that basis. From the record here, a reasonable juror could have found the latter. There was evidence of record that the counterflow method of the claimed invention, which the Gencor Ultraplant performs, offered the prospect of overcoming significant problems -- control of blue smoke emissions and product degradation -- in a time of increasing environmental concern. A reasonable juror could have found that the sales made by Gencor of its counterflow plants were made because of those advantages and that there were "no acceptable substitutes other than the patented device." *See, e.g., Kaufman Co. v. Lantech, Inc.*, 926 F.2d at 1143 n.17, 17 USPQ2d at 1833 n.17 (Patent owner "sustained its burden of showing that [**32] each customer desired the advantages of the film-driven prestretch by merely showing that the customer chose to purchase a film-driven prestretch machine instead of conventional . . . prestretch machines.").

Gencor argues that Standard Havens never bid on the Mount Hope and Balf plant sales, which were two of the sales necessarily included in the damage award. However, in both *Gyromat Corp. v. Champion Spark Plug Co.*, 735 F.2d 549, 222 USPQ 4 (Fed. Cir. 1984), and *Kaufman Co. v. Lantech, Inc.*, this court concluded that it was not of controlling significance that the patent owner did not bid on every infringing sale. *Gyromat* states: "The fact that [the patentee] bid against [the in-

fringer] on only seven of the 152 infringing sales does not show that [the patentee] could not and would not have made those sales if [the infringer] had not infringed." 735 F.2d at 554, 222 USPQ at 8. Although those cases involved two-supplier markets and a more competitive market existed here, the competitive processes here were not shown to have the advantages of the patented counterflow process. Thus, the fact that Standard Havens did [**33] not bid on Mount Hope and Balf is not a basis for overturning the jury's award to Standard Havens of its lost profits attributable to those infringing sales by Gencor.

[*1374] However, only six of the ten plants sold by Gencor during the patent period were properly included in a patent damage award. Gencor persuasively argues that three of the ten sales were of noninfringing plants in the United States, and that one sale was made to a foreign customer located in England.

Regarding the three noninfringing plant sales, Standard Havens argues that Gencor's bids for those sales "included their infringing counterflow plant, and only later did Gencor introduce the parallel flow plant." Because of that substitution, which Standard Havens refers to as a "bait and switch" tactic, Standard Havens contends that it lost sales of its counterflow plant. We agree with Gencor, however, that because a contributorily infringing counterflow plant was not actually sold in those three instances, there was no direct infringement of the '938 patent and, thus, no contributory infringement. See, e.g., *Porter v. Farmers Supply Serv., Inc.*, 790 F.2d 882, 884, 229 USPQ 814, 815 (Fed. Cir. 1986). [**34]

As to the sale to a foreign customer, Standard Havens asserts that Gencor made the sale in the United States. The '938 patent claims a method for producing asphalt, not the apparatus for implementing that process. Thus, the sale in the United States of an unclaimed apparatus alone does not make Gencor a contributory infringer of the patented method. Moreover, infringement by the foreign customer has not been shown because there is no evidence of the plant's use in the United States. Further, there can be no inducement of infringement or contributory infringement under 35 U.S.C. § 271(b), (c) (1988) in the absence of direct infringement. See, e.g., *id.* Similarly, there is no evidence in the record showing that the foreign purchaser shipped products back to the United States made abroad by the patented process, see 35 U.S.C. § 271(g) (1988). Finally, we do not find the provisions of 35 U.S.C. § 271(f) (1988) implicated.

The patent damage award must therefore be vacated and the case remanded for redetermination of the proper award for lost profits based on the six infringing sales.

Gencor further argues that the \$ 5.93 million patent damage award is speculative, and that neither [**35] party can ascertain exactly how it was calculated. Although an award cannot be totally speculative, "the amount need not be proven with unerring precision." *Bio-Rad Lab., Inc. v. Nicolet Instrument Corp.*, 739 F.2d 604, 616, 222 USPQ 654, 664 (Fed. Cir. 1984). In jury cases, "awards, unless the product of passion and prejudice, are not easily overturned or modified on appeal." *Weinar v. Rollform, Inc.*, 744 F.2d 797, 808, 223 USPQ 369, 375 (Fed. Cir. 1984). The amount of damages is a question of fact, *SmithKline Diagnostics, Inc.*, 926 F.2d at 1164 n.2, 17 USPQ2d at 1925 n.2.

Standard Havens' evidence pertaining to patent infringement damages was provided primarily through the testimony of Mr. Brain. According to him, the damages incurred by Standard Havens during the patent period ranged from a cumulative low of \$ 4,114,860 to a high of \$ 6,925,998, depending upon the value of certain variables used in calculating the damages (e.g., estimated margin, value per ton, length of carrying period). The jury's award of \$ 5,931,000 for patent infringement damages is well within the range of those [**36] damage estimates. Also, the district court noted, the award was between the amounts estimated by plaintiff's and defendant's experts. Consequently, on this record the damage award of \$ 5.931 million could not have been rejected as too speculative had it otherwise been proper to use the ten plant sales. Because only six of the sales resulted in contributory infringement, the damage award must be reduced accordingly.

G. *The Contract Damage Award is Vacated, With Remand to the District Court to Redetermine the Amount of the Award.*

The jury's award of \$ 2,284,000 for breach of contract was similar to the patent lost profits damage award inasmuch as it was based on lost plant sales to Gencor. [*1375] This damage award also included the present value of profits on future parts sales.¹⁰ The lost plant sales pertained to Gencor's sale of five asphalt plants during the period between the date of the nondisclosure agreement and the issuance of the '938 patent. Standard Havens had to prove that, in the absence of the breach of that agreement, it would have made those five sales, just as it had to prove in the patent context that, in the absence of Gencor's contributorily infringing sales, it [**37] would have made those sales. See, e.g., *United Indus. Syndicate, Inc. v. Western Auto Supply Co.*, 686 F.2d 1312, 1316 (8th Cir. 1982) ("The fundamental measure of contract damages is that which places the nonbreaching party in the position it would have been but for the breach.").

10 The evidence of record indicates that the amount of the plant sales component of the contract damage award of \$ 2,284,000 is between \$ 1,239,365 and \$ 1,559,701. Thus, the parts sales component is between \$ 724,299 and \$ 1,044,635. Neither the jury nor the district court determined the exact breakdown between plant sales and parts sales.

Gencor argues that there is no substantial evidence showing that Standard Havens would have made the five pre-patent sales that Gencor made. Gencor's arguments in that regard resemble its arguments on why Standard Havens failed to prove damages in the patent context. For the reasons stated in the preceding section on patent damages, the jury could reasonably have found from the evidence [**38] that, if Gencor had not made the five pre-patent sales, Standard Havens would indeed have made them. Hence, we affirm the contract damage award reflecting plant sales lost to Gencor.

Gencor further contends that the future parts sales component of the contract damage award is improper due to the speculative nature of assessing future profits. It is true that courts will not award contract damages that are too remote, uncertain, or based wholly upon speculative expectations. *See Brown v. McBBS, Inc.*, 722 S.W.2d 337, 341 (Mo. Ct. App. 1986). A claim of lost profits on future sales, however, is possible if made "reasonably certain by proof of actual facts which present data for a rational estimate of such profits." *Id.* *See also Coonis v. Rogers*, 429 S.W.2d 709, 714 (Mo. 1968); *Jack L. Baker Cos. v. Pasley Mfg. & Distrib. Co.*, 413 S.W.2d 268, 270 (Mo. 1967).

Here the evidence is sufficient to support a finding by the jury that if Standard Havens had made the original plant sales it would have made the future parts sales as well. Although the record shows that over twelve companies provide parts for asphalt plants, the jury heard [**39] testimony concerning the lost sales "domino effect": when a company loses a plant sale it will also lose that plant's future parts sales because the customer normally purchases repair parts from the original plant vendor. Moreover, the amount of the future parts sales involved here -- between \$ 724,299 and \$ 1,044,635 -- is a reasonable figure in view of evidence of record that shows Standard Havens would lose between \$ 588,923 to \$ 1,472,308 in profits from expected parts sales for the five plants over a ten-year period.

The district court, however, has enjoined Gencor from future contributory infringement and that it is thereby enjoined during the patent's existence from making parts sales for the plants sold in the contract period. Standard Havens contends that Gencor is not enjoined because it is protected by the "repair" doctrine of *Aro*

Mfg. Co. v. Convertible Top Replacement Co., 377 U.S. 476, 12 L. Ed. 2d 457, 84 S. Ct. 1526, 141 U.S.P.Q. (BNA) 681 (1964) (*Aro II*), and *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 5 L. Ed. 2d 592, 81 S. Ct. 599, 128 U.S.P.Q. (BNA) 354, reh'g den., 365 U.S. 890, 6 L. Ed. 2d 201, 81 S. Ct. 1024 (1961) (*Aro I*), which permits the repair of a patented item that has been acquired from a patentee or a licensee [**40] of the patentee. We are unpersuaded by Standard Havens' reliance on the repair doctrine.

The repair doctrine is an extension of the implied right of a purchaser or licensee to use the patented item if it has been validly purchased or licensed from the patentee or from one authorized by the patentee. *See, e.g., Aro II*, 377 U.S. at 497 [*1376] ("When the patentee has sold the patented article or *authorized its sale* and has thus granted to the purchaser an 'implied license to use,' it is clear that he cannot thereafter restrict that use . . .") (emphasis added). That right to use includes the right to purchase repair parts and to repair the patented item.

Gencor argues that the *Aro* repair doctrine is inapplicable here because the asphalt plants were not purchased from the patentee or from one authorized by the patentee to sell. In *King Instrument Corp. v. Otari Corp.*, however, an authorized seller was not necessary for the repair doctrine to apply. *King Instrument Corp. v. Otari Corp.*, 767 F.2d 853, 226 USPQ 402 (Fed. Cir. 1985), appeal from remand, 814 F.2d 1560, 2 USPQ2d 1201 (Fed. Cir. 1987). [**41] Otari was an infringer, but the court held that it became an implied licensee when the court-awarded damages were paid to King, the patent owner. Upon payment, the patent owner was made whole for the lost profits on the infringing machine sales. In this case, the application of *King* depends on whether Gencor will pay the contract damages. In an analogous fact pattern, *Amstar Corp. v. Envirotech Corp.*, 823 F.2d 1538, 3 USPQ2d 1412 (Fed. Cir. 1987), an injunction was denied to a patentee who had been "awarded full compensation." There the court found that the defendant's parent corporation had filed a corporate guarantee and held the guarantee to be "sufficiently equivalent to compensation [to the patent owner] to warrant denial of an injunction." *Id.* at 1549, 3 USPQ2d at 1420. Gencor's asserted financial difficulties, *see Standard Havens Prods. v. Gencor Indus., Inc.*, 897 F.2d 511, 515, 13 USPQ2d 2029, 2032 (Fed. Cir. 1990), render its payment of the contract award to Standard Havens uncertain, and there is no outside assurance of payment as in *Amstar*. To permit the repair doctrine [**42] of *King* to be applied in this case would be to anticipate payment of the contract award when it is not a foreseeable event.

Even if payment by Gencor of the contract damage award for the five plants were foreseeable, it is not possible to determine in advance whether the future sales of

parts would be a permissible repair or an impermissible reconstruction. The difference between a repair and a reconstruction is a difficult question that must be resolved case by case based on all the circumstances. *See, e.g., Everpure, Inc. v. Cuno, Inc.*, 875 F.2d 300, 10 USPQ2d 1855 (Fed. Cir. 1989); *Dana Corp. v. American Precision Co.*, 827 F.2d 755, 3 USPQ2d 1852 (Fed. Cir. 1987); *Porter v. Farmers Supply Serv.*, 790 F.2d 882, 229 USPQ 814 (Fed. Cir. 1986). For now, one can only guess whether and how many of Gencor's future parts sales would be used in repairs under the *Aro* doctrine and thereby be free of the injunction.

We must conclude in the circumstances of this case that the lost profits on the future sales of parts are entirely too speculative to permit a damage award on that basis.

CONCLUSION

[**43] We affirm the district court's judgment that the '938 *patent* is infringed and not invalid; we vacate the patent damage award for reconsideration in light of our conclusion that only six of the ten plants should be included in computing the damage award; and we vacate the contract damage award and remand to exclude from that award the amount representing profits attributable to future parts sales.

COSTS

The parties shall bear their respective costs.

AFFIRMED-IN-PART, VACATED-IN-PART, AND REMANDED